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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/500,309

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Simone Pratesi

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EXAMINER

GOLOBOY, JAMES C

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/500,309	<b>Applicant(s)</b> PRATESI ET AL.	
	<b>Examiner</b> James Goloboy	<b>Art Unit</b> 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/28/04 &amp; 10/19/05</u> | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/500,309.

Claim 1 of the '309 application recite a self-lubricating plastics material for sealing elements. The difference between this and the currently presented claim 1 is that the '309 application does not recite a sealing element made from the plastic material; however, this would have been obvious to one of ordinary skill in the art because claim 1 of the '309 application is used for a sealing element. Claims 2-12 of the

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'309 application are analogous to claims 2-12 of the current application and therefore also obvious. Claims 13-19 of the '309 application disclose the use of the plastic material for reducing friction, particularly in a reciprocating compressor, as do claims 13-18 of the current application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10 recites a viscosity range for the lubricant, but does not recite the temperature at which the viscosity is measured.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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6. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Beckmann (U.S. Pat. No. 6,482,873).

In the abstract, Beckmann discloses a plastic material comprising microcapsules containing a lubricant ("tribologically effective content substance"). In column 3 lines 16-18 Beckmann discloses that the plastic can comprise a wear-resistant component. The plastic material of Beckmann therefore meets the limitations of the plastic material of claim 1. In column 1 lines 7-10 Beckmann teaches that the plastic materials are preferentially used as frictionally stressed seals, bearings, and guiding elements, meeting the limitations of the sealing element of claim 1.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann.

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a sealing element comprising plastic material meeting the limitations of claim 1, but does not disclose microcapsules having the average diameters recited in claim 7.

In column 2 lines 43-45, Beckmann teaches that the microcapsules can range in diameter from 0.5  $\mu\text{m}$  to 1,000  $\mu\text{m}$ . "[ A ] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness." *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). See also *In re Harris*, 409 F.3d 1339, 74 USPQ2d 1951 (Fed. Cir. 2005). See MPEP 2144.05(I). Therefore, the size range recited in claim 7 is rendered obvious by Beckmann.

10. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Kakehi (U.S. Pat. No. 5,934,680).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a sealing element comprising a plastic material in accordance with claim 1 that comprises a polymer (column 2 lines 12-16), but does not disclose specific suitable polymers.

In column 8 lines 42-53 and column 9 lines 14-22 (Examples 1-2), Kakehi discloses seals comprising polyetherether ketone (PEEK) and a polytetrafluorethylene

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(PTFE) resin, as in claims 2-5. The use of the PEEK/PTFE seal of Kakehi as the polymer in the plastic material of Beckmann meets the limitations of claims 2-5.

It would have been obvious to one of ordinary skill in the art to use the PEEK/PTFE seal of Kakehi as the polymer in the sealing element of Beckmann, as Kakehi teaches in column 1 lines 6-11 that such seals are effective for sealing hydraulic fluid in a torque converter, hydraulic clutch, or automatic transmission.

11. Claims 5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Yamashita (U.S. Pat. No. 4,504,543).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a sealing material comprising a plastic material in accordance with claim 1 which may comprise a liquid lubricant incorporated into the microcapsules (column 2 lines 31-34), but does not disclose specific liquid lubricants other than broadly disclosing oils and greases.

From column 8 line 58 through column 9 line 9 (Example 1), Yamashita discloses an example where a porous material contains microcapsules containing an alpha-olefin lubricating agent. The lubricating agent is low in acidity, as in claim 9, and has a viscosity of 28 cSt, falling within the range recited in claim 10. The microcapsules have an average diameter of 15  $\mu\text{m}$ , within the range recited in claim 7. In column 6 lines 11-25, Yamashita teaches that the material can further comprise polytetrafluoroethylene (PTFE, line 24). Additionally, the the material of Example 1 comprises 25% by weight of the microcapsules (60 parts of 240), within the range recited in claim 8.

It would have been obvious to one of ordinary skill in the art to use the microcapsules of Yamashita in the sealing element of Beckmann, in order to form a material where the microcapsules break due to heating rather than frictional stress. It would have been obvious to include PTFE in the material in order to further enhance the lubricity.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Dennen (U.S. PG Pub. 2002/0195355).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a sealing element comprising a plastic material in accordance with claim 1 comprising microcapsules (column 2 lines 31-34), but does not disclose the material used for the shell of the microcapsule.

In paragraphs 2 and 21, Dennen discloses a microcapsule with a polyoxymethylene urea shell that releases its contents after frictional contact, similarly to the microcapsules of Beckmann. While the microcapsules of Dennen contain a flavor oil and not a lubricant, it does relate to the problem of microcapsule shells that release their contents upon frictional contact. Where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved. See MPEP 2141.01(a)(II).



It would have been obvious to one of ordinary skill in the art to use the polyoxymethylene urea shell of Dennen in the microcapsules of Beckmann, as Dennen teaches that such a shell will break and release its contents upon frictional contact.

13. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Korshak (U.S. Pat. No. 4,076,634).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a sealing element comprising a plastic material in accordance with claim 1 which may comprise a liquid lubricant incorporated into the microcapsules (column 2 lines 31-34), but does not disclose the further addition of lubricant additives.

Korshak, in column 1 lines 4-17 and column 2 lines 1-13 discloses a self-lubricating plastic material. In column 4 lines 47-52 Korshak teaches that metal powders may be added to the material to improve the thermal and electrical conductivity, and in column 4 lines 40-46 discloses a composition where zinc powder, meeting the limitations of claims 11-12, is the metal powder.

It would have been obvious to one of ordinary skill in the art to include the zinc powder of Korshak in the encapsulated lubricant of Beckmann, as Korshak teaches that zinc powder is effective in improving the thermal and electrical conductivity of self-lubricating plastics.

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14. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Ishihara (U.S. Pat. No. 6,189,322).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a plastic material in accordance with claim 1 which may be used as a sealing or guiding element, but does not describe its use in a reciprocating compressor.

Ishihara, in the reference's claim 15, discloses a refrigerant compressor which is sealed with a plastic, such as the plastic of Beckmann. In column 2 lines 11-21 Ishihara teaches that the compressor is a reciprocating compressor, as recited in claims 13-14.

It would have been obvious to one of ordinary skill in the art to use the plastic material of Beckmann in the reciprocating compressor of Ishihara, as Ishihara teaches that plastic seals are suitable for forming a hermetic seal in such compressors.

15. Claims 13-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Baumann (U.S. Pat. No. 5,033,940).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a plastic material in accordance with claim 1 which may be used as a sealing or guiding element, but does not describe its use in a reciprocating compressor.

Baumann discloses, in the abstract, a reciprocating compressor comprising at least one cylinder and piston unit. The compressor is drawn in the figure of Baumann. In column 3 lines 47-50 Baumann teaches that the pistons each have a guide ring and

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sealing ring made of a self-lubricating material, such as that of Beckmann. In the figure, it is seen that the rings **53** and **54** are accommodated in the pistons **5**, **6**, and **7** in the manner required by claims 16-17.

It would have been obvious to one of ordinary skill in the art to use the plastic material of Beckmann as the sealing and guide rings of Baumann, as Baumann teaches that the rings are self-lubricating.

16. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Humphrey (U.S. Pat. No. 4,495,855).

The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a plastic material in accordance with claim 1, but does not describe its use in a reciprocating compressor.

Murakami, in column 1 lines 6-22, discloses an oil-free reciprocating gas compressor, and in column 1 lines 32-50 discloses that a conventional oil-free compressor employs packing rings. It would have been obvious to one of ordinary skill in the art to use the sealing element of Beckmann as the packing rings in the compressor of Humphrey, meeting the limitations of claim 15, as the element is self-lubricating and compensates for the lack of lubricating oil.

17. Claims 13, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckmann in view of Scarlett (U.S. PG Pub. No. 2001/0045703).

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The discussion of Beckmann in paragraph 6 above is incorporated here by reference. Beckmann discloses a plastic material in accordance with claim 1 which may be used as a sealing or guiding element, but does not describe its use in a reciprocating compressor.

In Figure 6 and paragraph 31, Scarlett discloses a piston sealing ring assembly that contains a gap ("through cut"), as required in claim 18. In paragraph 1, Scarlett teaches that the sealing rings are used in reciprocating compressors.

It would have been obvious to one of ordinary skill in the art to use the sealing elements of Beckmann as the sealing rings of Scarlett, as they are self-lubricating and therefore suitable for use in oil-free compressors.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Goloboy whose telephone number is 571-272-2476. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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